

CLAIMS

1. A current measuring method that involves mounting a current sensor on a board having a conductor for measurement and measuring a current flowing through said conductor for measurement, characterized in that said current sensor is mounted on a surface of said board on the side that is opposite to the side provided with said conductor for measurement, that said current sensor has a Hall element that detects magnetic fields and magnetic flux concentrating means that causes a magnetic flux to be concentrated in a predetermined direction, and that said magnetic flux concentrating means is provided in such a manner that a magnetic flux generated by a current flowing through said conductor for measurement is concentrated on a magnetic flux sensing surface of said Hall element.
2. The current measuring method according to claim 1, characterized in that said current sensor is mounted on a surface of said board on the side that is opposite to the side provided with said conductor for measurement and in a position symmetrical to said conductor for measurement with respect to said board.
3. The current measuring method according to either claim 1 or claim 2, characterized in that a soft magnetic material is provided on an exterior surface of said conductor for measurement on the side that is opposite to an exterior surface facing the surface of said board.
4. The current measuring method according to either claim 1 or claim 2, characterized in that a soft magnetic material

is provided on an exterior surface of said current sensor on the side that is opposite to an exterior surface facing the surface of said board.

5 5. The current measuring method according to either claim 1 or claim 2, characterized in that between said current sensor and said board, there are provided multiple soft magnetic materials so as to be parallel to the direction of a current flowing through said conductor for measurement.

10 6. The current measuring method according to any one of claims 1 to 5, characterized in that said current sensor integrally incorporates said Hall element and said magnetic flux concentrating means and that said magnetic flux concentrating means is provided between said Hall element and said facing surface.

15 7. The current measuring method according to claim 6, characterized in that said magnetic flux concentrating means comprises multiple magnetic flux concentrating plates and is provided in such a manner that when said current sensor is mounted, surfaces of said magnetic flux concentrating plates
20 are facing the surface of said board.

8. The current measuring method according to claim 7, characterized in that that said multiple magnetic flux concentrating plates are spaced in such a manner that when said current sensor is mounted, surfaces of said magnetic flux
25 concentrating plates are opposite to the surface of said board and said multiple magnetic flux concentrating plates are positioned on both sides of a centerline of said conductor

for measurement as viewed from the direction perpendicular to the plane of said board.

9. The current measuring method according to anyone of claims 1 to 8, characterized in that said conductor for measurement is a printed wiring and that said board is a printed board.

10. A current measuring device, characterized in that the device comprises a board having a conductor for measurement and a current sensor to be mounted on the surface of said board, and measures a current flowing through said conductor for measurement, that said current sensor is mounted on the surface of said board on the side that is opposite to the side provided with said conductor for measurement, that said current sensor has a Hall element that detects magnetic fields and magnetic flux concentrating means that concentrates a magnetic flux in a predetermined direction, and that said magnetic flux concentrating means is provided in such a manner that a magnetic flux generated by a current flowing through said conductor for measurement is concentrated on a magnetic flux sensing surface of said Hall element.

11. The current measuring device according to claim 10, characterized in that said current sensor is mounted on the surface of said board on the side that is opposite to the side provided with said conductor for measurement and in a position symmetrical to said conductor for measurement with respect to said board.

12. The current measuring device according to either claim 10 or claim 11, characterized in that a soft magnetic material is provided on an exterior surface of said conductor for

measurement on the side that is opposite to the side of an exterior surface facing the surface of said board.

13. The current measuring device according to either claim 10 or claim 11, characterized in that a soft magnetic material
5 is provided on an exterior surface of said current sensor on the side that is opposite to an exterior surface facing the surface of said board.

14. The current measuring device according to either claim 10 or claim 11, characterized in that between said current
10 sensor and said board, there are provided multiple soft magnetic materials so as to be parallel to the direction of a current flowing through said conductor for measurement.

15. The current measuring device according to either claim 10 or claim 11, characterized in that said current sensor
15 integrally incorporates said Hall element and said magnetic flux concentrating means and that said magnetic flux concentrating means is provided between said Hall element and said facing surface.

16. The current measuring device according to claim 15,
20 characterized in that said magnetic flux concentrating means comprises multiple magnetic flux concentrating plates and is provided in such a manner that when said current sensor is mounted, surfaces of said magnetic flux concentrating plates are facing the surface of said board.

25 17. The current measuring device according to claim 16, characterized in that that said multiple magnetic flux concentrating plates are spaced in such a manner that when said current sensor is mounted, surfaces of said magnetic flux

concentrating plates are opposite to the surface of said board
and said multiple magnetic flux concentrating plates are
positioned on both sides of a centerline of said conductor
for measurement as viewed from the direction perpendicular
5 to the plane of said board.

18. The current measuring device according to anyone of claims
10 to 17, characterized in that said board has multiple
conductors to be measured and that said current sensor is
mounted in a position where the distance of said board from
10 each of said conductors to be measured is in a predetermined
relation.

19. The current measuring device according to anyone of claims
10 to 18, characterized in that said conductor for measurement
is a printed wiring and that said board is a printed board.

15 20. The current measuring device according to anyone of claims
10 to 19, characterized in that a magnetic flux sensing part
of said Hall element is formed from Si, GaAs, InAs or InSb.